

Amalgam tattoo in a patient with prior history of melanoma: a case report

Tatuagem por amálgama em paciente com história pregressa de melanoma: relato de caso

Abstract

Purpose: Black macules on the oral mucosa may be diagnostic of melanotic macule, melanotic nevus, amalgam tattoo or oral pigmented lesions caused by endodontic sealers, vascular lesions and melanoma. The differential diagnosis of such lesions is important as melanoma may be quite serious and must be treated quickly. A case of black macule on the oral mucosa is reported here, focusing on the importance of the differential diagnosis instituted.

Case description: A 56-year-old female patient with a previous history of cutaneous melanoma consulted the Stomatology Service for evaluation of a black macule on the floor of the mouth. The diagnosis was found to be amalgam tattoo, although a radiographic exam had not shown an image compatible with amalgam.

Conclusion: The diagnosis of amalgam tattoo can be confirmed by the detection of a metallic fragment in a radiographic exam, a situation that dispenses with the institution of treatment. However, if such a fragment is not detected, a biopsy is necessary to rule out the diagnostic hypothesis of melanocytic neoplasia.

Key words: Melanoma; melanotic macule; amalgam tattoo

Resumo

Objetivo: As máculas negras que acometem a mucosa oral incluem os diagnósticos de mácula melânica, nevo melânico, tatuagem por amálgama ou por cimento endodôntico, lesões vasculares e melanoma. O diagnóstico diferencial de tais lesões é importante considerando-se a gravidade desta última. Os autores relatam um caso de mácula negra na mucosa oral enfatizando a importância do diagnóstico diferencial e a conduta instituída.

Descrição do caso: Paciente do sexo feminino, 56 anos de idade, com história prévia de melanoma cutâneo, consultou o Serviço de Estomatologia para avaliação de mácula negra em assoalho de boca. O diagnóstico foi de tatuagem por amálgama, embora o exame radiográfico não exibisse imagem compatível com fragmento metálico.

Conclusão: O diagnóstico de tatuagem por amálgama pode ser confirmado por meio da detecção de fragmentos metálicos ao exame radiográfico, situação que dispensa a instituição de tratamento. Entretanto, se os fragmentos não forem detectados, a biópsia se faz necessária para descartar a hipótese de neoplasia melanocítica.

Palavras-chave: Melanoma; mácula melânica; tatuagem por amálgama

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Introduction

Black macules on the oral mucosa may be diagnostic of melanotic macule, melanotic nevus, amalgam tattoo or oral pigmented lesions due to endodontic cement, vascular abnormalities and melanoma. Amalgam tattoo of the oral mucosa is a relatively frequent finding and generally occurs in one of four modes: condensation in the gingiva during restoration, penetration of particles into mucosa lacerated by rotary instruments during the removal of old restorations, introduction of broken fragments during tooth extraction in an alveolus on the periosteum or particles introduced in the surgical wound during endodontic treatment with retrograde obturation with amalgam. The most frequent sites of amalgam tattoo are the gingiva, alveolar mucosa and buccal mucosa (1). When the diagnosis is confirmed by the detection of a metallic fragment by radiographic examination, no treatment is necessary. However, if fragments are not detected, a biopsy should be performed to rule out melanocytic neoplasia (2).

Case description

The patient, a 56-year-old female, consulted the Stomatology Service complaining of a “blemish in the mouth” that had been developing for four days (sic). She reported a history of cutaneous melanoma in the thorax eight years prior, which had been treated by surgical excision. The patient was taking fluoxetine, calcium and simvastatin. On clinical examination, a blackish-colored macule, measuring 0.5 cm × 0.3 cm, was found on the left side of the floor of the mouth. The lesion was asymptomatic and slightly firm on palpation. The first lower molar, which was next to the lesion, showed extensive metallic restoration (Fig. 1). The patient confirmed the existence of a former amalgam restoration in that tooth but could not precisely recall the time elapsed since it had been replaced with the present restoration. Panoramic and occlusal radiographic examinations did not reveal either a tooth with endodontic treatment or an image compatible with amalgam in the area of the lesion (Figs. 2 and 3). Laboratory tests including a complete blood count, erythrocyte sedimentation rate, fasting blood glucose, platelet count, prothrombin time and partial thromboplastin time were performed. All test values were within normal reference ranges, and a biopsy of the lesion was taken (Fig. 4). Due to the diagnostic possibilities of melanoma and amalgam tattoo, hematoxylin/eosin (H&E) and immunohistochemical processing for S-100 protein and HMB-45 were requested as soon as the biopsy specimen was obtained. The H&E histopathological examination showed connective tissue in which there appeared to be an accumulation of material compatible with amalgam, as well as chronic inflammatory cell infiltrate including giant multinucleated cells. The overlying surface was made up of squamous stratified epithelium (Fig. 5). The immunohistochemical examination was negative for S-100 protein and HMB-45. The diagnosis of amalgam tattoo was confirmed, and the patient has not reported any recurrence of the lesion.



Fig. 1. Clinical appearance: blackish-colored macule on the floor of the mouth, left side.



Fig. 2. Panoramic radiographic image.



Fig. 3. Occlusal radiography does not show any image compatible with metallic fragment in the area of the lesion.

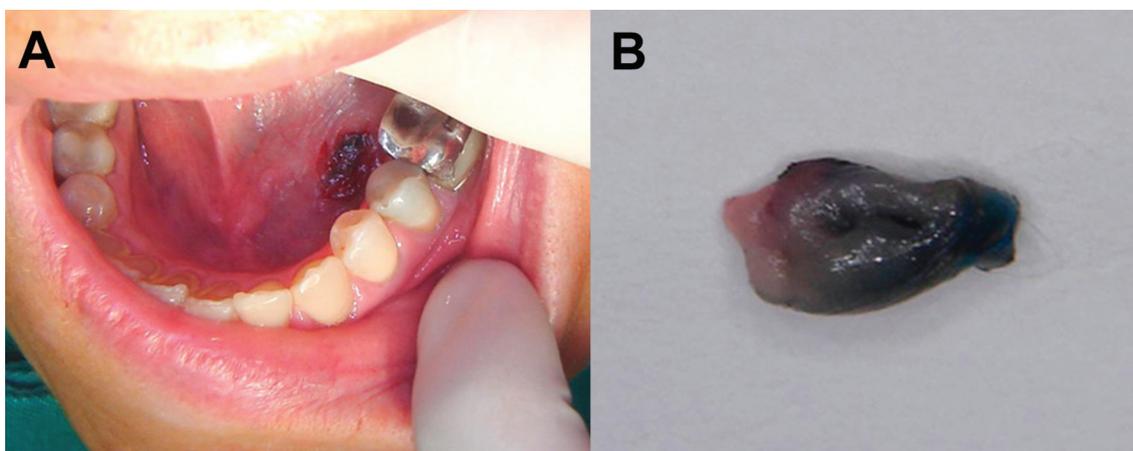


Fig. 4. (A) Clinical appearance after surgical excision. (B) Specimen excised.

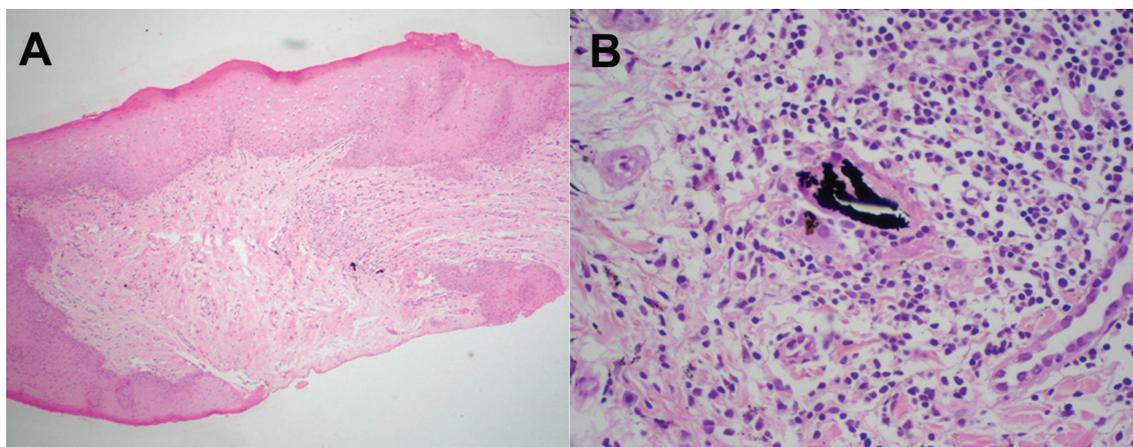


Fig. 5. Histopathological examination: (A) The specimen shows connective tissue overlaid by squamous stratified epithelium, HE, 100 \times . (B) Connective tissue showing chronic inflammatory cell infiltrate and particles of material compatible with amalgam, HE, 200 \times .

Discussion

The differential diagnosis of black lesions in the oral mucosa is important, mainly due to the severity of melanoma. Diagnostic possibilities include amalgam tattoo, oral lesions due to endodontic sealers, vascular lesions, melanotic macule, melanotic nevi and melanoma (1). The course of clinical investigation to determine an accurate diagnosis depends initially on the information obtained during anamnesis, such as time of development and symptomatology, followed by objective data from a physical examination and complementary imaging examinations.

The information obtained from anamnesis in this case was worrisome, since the patient had suffered from cutaneous melanoma in the past and indicated that the oral lesion had developed in a course of only four days. The history of cutaneous melanoma and short time of development

reaffirmed the necessity of a definitive diagnosis. However, after the diagnosis of amalgam tattoo was confirmed, it was evident that the time of development reported was not compatible with such a lesion, which certainly would have developed over a longer period of time.

Vascular lesions are represented mainly by hemangiomas (3). These appear as a blemish or nodule of reddish, purplish or violetish coloration, circumscribed or diffuse, relatively flaccid upon palpation and variable in size. The tongue, lips and buccal mucosa are the most frequently affected sites (4). Differential diagnosis can be aided by diascopy. When the lesion is pressed with a glass slide, the blood content will flow to the capillaries, making the lesion disappear momentarily. On the other hand, if the glass slide presses on real tissue pigmentation or another solid lesion, the color will not disappear (2). In the present case, diascopy was not performed because the

lesion was located on the floor of the mouth, precluding this procedure. However, the firm consistency of the lesion considerably reduced the likelihood that a hemangioma was involved.

Melanotic macule is a benign lesion caused by an increase in the production and deposition of melanin without an increase in the number of melanocytes. Its occurrence is common in gingiva, buccal mucosa and palate. Melanotic macule may appear as a single lesion or as multiple lesions with a diameter smaller than 1 cm, well-outlined borders and a dark, homogeneous coloration. A biopsy may be required to establish the diagnosis and eliminate the possibility of melanoma, particularly if the lesion occurs on the palate. Once the diagnosis is confirmed, no treatment whatsoever is necessary (2).

The presence of silver in some endodontic materials can cause exogenous pigmentation upon the deposition of metal in tissues. Occasionally, the lesions can be associated with silver cones, which were used long ago for the obturation of root canals, but more often occur due to endodontic sealers that contain silver. Tattoo formation by endodontic material can include a single or multiple lesions. The length of time that the material is in contact with the oral cavity does not increase the number of tattoos, but longer periods of contact with the mucosa are associated with larger tattoos. Microscopic examination reveals granulation tissue along with endodontic material and a large prevalence of polymorphonuclear neutrophils. Lymphocytes and eosinophils may also be present in small numbers. Large numbers of macrophages and giant multinucleated cells can appear deposited on vessel walls. Sealers can also cause fibroplasia and abscess (5). In the present clinical case, there were no teeth with endodontic treatment close to the lesion, so the possibility of tattoo formation by endodontic material was discarded.

Melanotic nevus is a rare benign tumor of melanocytes. On clinical examination, the lesion appears as an oval or circular macule, with coloration varying from brown to blue, grayish or dark, although pigmentation is sometimes absent. The hard palate, buccal mucosa and gingiva are the sites most often affected. Surgical excision is recommended for differential diagnosis (4). It is believed that the nevus can be a precursor to melanoma, although the transformation process has not been well documented (2). The present account of a patient in which the lesion had (supposedly) developed in only four days weakened the diagnostic hypothesis of melanotic nevus, since this lesion typically grows slowly. Furthermore, the prior history of cutaneous melanoma did not allow us to discard the possibility of malignant melanocytic neoplasia.

Oral melanoma occurs more frequently in the anterior region of the maxilla, especially on the palate and alveolar mucosa (6). The lesions can be asymptomatic, darkened, brownish or amelanotic, with or without ulceration (2,6). On clinical examination, the so-called ABCD of melanoma is observed: asymmetry (due to a pattern of uncontrolled growth), irregular borders, variable coloration (depending

on the amount and depth of melanotic pigmentation) and diameter greater than 6 mm, features that distinguish it from melanocytic nevus. The clinical appearance of melanoma can vary from a typical pigmented macule to proliferative lesions that may or may not be pigmented, may emerge as single or multiple lesions, may be characterized as primary or metastatic and are often asymptomatic. Oral melanoma is also highly aggressive and generally indicates a poor prognosis, because many of these lesions are locally invasive and can metastasize into the adjacent bone and determine metastasis (2,7).

Amalgam tattoo manifests as macules or, rarely, slightly raised lesions. They can have a bluish, grayish or darkened coloration. The edges can be well defined, irregular or diffuse. Microscopic examination shows metal fragments dispersed in the connective tissue. The silver salts of the amalgam preferentially tinge reticular fibers, especially those that surround nerves and vascular canals, and are also able to reach the muscle tissue. Although 50% of these lesions do not involve inflammation, amalgam tattoo may occasionally appear in the form of granuloma containing macrophages and giant multinucleated cells (8). This could explain why the lesion in the reported case was slightly firm upon palpation. Also, the extensive metallic restoration in the left first lower molar next to the lesion supported the diagnostic hypothesis of amalgam tattoo. The diagnosis of a tattoo is confirmed when the radiographic examination of a black macule of the oral mucosa reveals fragments of material with a radiopacity compatible with amalgam or endodontic sealer (9). Based on the literature, the detection of radiopaque material within a lesion dispenses with biopsy. In the case in question, the lack of a radiographic image compatible with amalgam associated with a prior history of cutaneous melanoma was a determining factor in the option for a surgical course. In addition, this case confirms the occurrence of an amalgam tattoo in which the material may not be detected by radiographic examination. Radiographic films, however, should be of high definition so that small fragments can be visualized (1).

It is also worth considering the inflammatory reaction observed in the histopathological exam in this case. Leite and colleagues (10) reported that residual elements of amalgam tattoos, mainly containing silver, may have noxious effects on tissues. These authors also point out that little is known about the activation of inflammatory cells by mucosa-implanted amalgam debris, and that tissue reaction to amalgam tattoo likely depends on the particle size. Also, it is known that some cases of amalgam tattoo can present as a granuloma (8), which contains inflammatory cells including lymphocytes.

In conclusion, the diagnosis of amalgam tattoo can be confirmed by the detection of metallic fragments in a radiographic examination. This situation dispenses with the institution of treatment even though some cases can cause a tissue inflammatory response. However, if metallic fragments are not detected, a biopsy is necessary to rule out the diagnostic hypothesis of melanocytic neoplasia.

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